TIP SHEET #3

# Rebar-Tying Tools

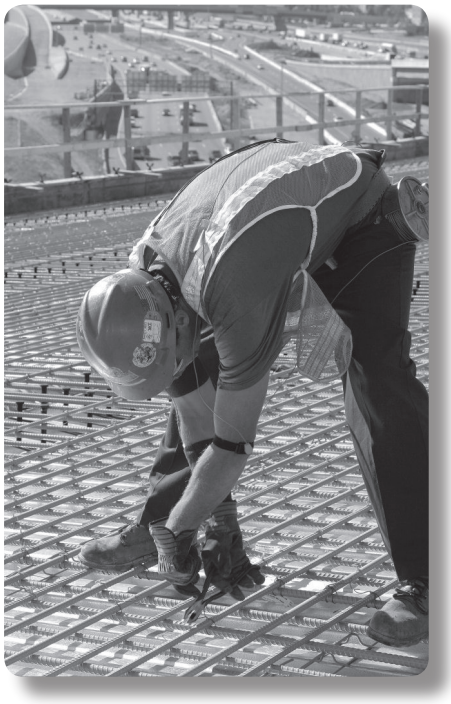


## The Problem

Ironworkers tie rebar by hand with pliers and tie wire. This work requires repeated, fast hand and arm movements while applying a lot of force. If you tie rebar at ground level, you also have to work in a stooped position, with your body bent deeply forward.

Tying rebar by hand increases your chance of developing hand-wrist disorders due to the high hand forces used to grip pliers, the rapid hand movements used to wrap and twist wire, and the high pressure on the hand and fingers when twisting and cutting wire. If you work at ground level, you also are at risk of low back injuries from frequent and prolonged stooping and bending.

*Problem: Tying rebar by hand*



## One Solution

Use a **rebar-tying tool**. This lowers your risk of hand and wrist injury because it eliminates the frequent rapid hand motions required when using pliers. Some rebar tiers allow you to work standing up, so there is less stress on your low back due to stooping and bending.

*Solution: Rebar-tying tool with extension handle*

## How It Works

Both manual and battery-powered rebar-tying tools are currently available.

Battery-powered rebar tiers automatically fasten the bars together with tie wire. They can be used whenever a simple “wrap and twist” tie is needed. However, they do not provide the strength of “saddle” or “figure 8” ties.

Several companies offer power rebar tiers. With one tool design, you press the trigger and the tool feeds wire around the bars and then twists and cuts the wire. These models are not stand-up tools, but an adjustable extension handle is available.

A second tool is a stand-up power tier that uses coiled spring wire to hold the bars together. The tool automatically "screws" (or spins) flat coiled wire around the intersecting bars. This tool was designed using ergonomic principles.

## Benefits for the Worker and Employer

Workers should experience fewer injuries. Studies conducted by NIOSH and the Construction Safety Association of Ontario (Canada) compared manual methods and one model of power tying tool, and showed that using the power tool may reduce the risk of injury to workers' hands, wrists, and low back.

There have been documented increases in productivity. The NIOSH-Ontario studies found that power tying tools can tie rebar twice as fast as hand tying. Actual productivity increases will depend on the type of work and the frequency of tying. Also, contractors and rod busters who used the model of power tool involved in the studies reported they preferred it to manual tying for flat work. Before using one of these tying tools, make sure the ties are approved for the job you will be doing.

## Approximate Cost

Wire feeding tiers are under $2,700 and wire costs around 2 cents per tie. Tiers using coiled spring wire are under $1,300 and wire costs around 3 cents per tie. Powered models generally require extra batteries and chargers, which may be included in the price.

## For More Information

- Products related to this solution are described at *www.cpwr.com/simple.html*. Products also may be found on the internet using the following search terms: "rebar tying system" or "rebar tier."
- Local contractor tool and equipment suppliers or rental companies may be another source of information on products.
- For general information on this solution, check *www.cpwrconstructionsolutions.org* and *www.elcosh.org*.